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Survey of the Deficits in Surgeons' Knowledge of Contralateral Prophylactic Mastectomy

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The contralateral prophylactic mastectomy (CPM) rate has increased dramatically over the past decade. The reasons for this trend are multiple but include patient misperceptions about the risk of contralateral breast cancer (CBC) and how a CPM affects recurrence and survival.^{1,2} Little is known, however, about surgeons' knowledge of CPM and CBC and how this informs medical decision making. The literature on these topics is continually evolving, but definitive outcomes data and recommendations for CPM are lacking. Because surgeons are most patients' preferred source of medical information regarding breast cancer,¹ we thought

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it prudent to examine surgeons' knowledge of CPM. We hypothesized that surgeons' knowledge of CPM is variable and represents an opportunity for improved education on the topic.

Methods |

Between December 2013 and February 2014, we emailed a survey to 2436 active members of the American Society of Breast Surgeons, obtaining 592 responses (24.3%). The survey assessed demographics, training, practice characteristics, and knowledge. For knowledge, we presented 2 clinical cases and 3 factual questions developed by breast surgeons and medical oncologists (Table 1). We dichotomized responses into "low" (0–3 correct) and "high" (4–5 correct) knowledge categories and tabulated frequencies. Logistic regression was used to examine which demographic factors predicted a "high level" of knowledge. Institutional review board approval was waived by the authority of NorthShore University HealthSystem in Evanston, Illinois. The surgeons completing the survey did not provide informed consent because the data were deidentified. $P < .05$ was considered statistically significant.

Results |

Of the 592 surgeons who completed the survey, 224 (37.8%) had completed fellowship training, 350 (59.1%) were in private practice, 352 (59.5%) were male, and 343 (57.9%) devoted at least 80% of their practice to breast disease. Table 1 lists knowledge questions and answer options that were used in the survey and the ratio of correct answers to each question. In aggregate, 232 (39.2%) of respondents had a "low level" of knowledge, and 360 (60.8%) had a "high level" of knowledge. Surgeons scored 85% or better on questions about the survival benefit of CPM and the 5- and 10-year risk of CBC in patients with no additional risk factors. Working at university/ teaching hospitals, a higher proportion of practice devoted to breast disease, and completion of fellowship training were significantly associated with a high level of knowledge in univariate analyses (Table 2). However, duration of practice and completion of fellowship training remained significant predictors of a high level of knowledge in multivariate analysis.

Discussion |

Four in 10 respondents to our survey had a low level of knowledge about CPM. Surgeons scored well on questions addressing the survival benefit of CPM and the overall 5- and 10-year risk of CBC, but they did not score as high on CBC risk for specific subgroups of patients such as *BRCA* carriers and those with lobular carcinoma. Our study was limited in that the knowledge questions only addressed CBC risk and CPM's effect on survival; we did not address other aspects of CPM such as operative complications, reconstruction risks, or CBC risk for patients with other risk factors. Therefore, our findings may not reflect overall knowledge about CPM. Our low response rate is also a limitation because the nonresponders could have systematically higher or lower levels knowledge than those who responded.

Despite these limitations and to the best of our knowledge, the present study represents the largest and only study in the United States to examine surgeons' knowledge about CPM. A study of 81 surgeons in Australia asked about CPM but did not question surgeons about CBC risk or survival after CPM.⁶ What is not clear is how surgeons' knowledge translates into treatment patterns. Are patients undergoing CPM more frequently because surgeons are not adequately informing them? Could this be because the surgeons themselves are not well informed? Decision aids or teaching materials that address CPM and its utility for a patient with newly diagnosed breast cancer are needed. Part of this intervention will have to involve not only educating patients on CPM's risks and benefits, but also teaching surgeons how to effectively counsel patients on CPM to ensure informed decision making.

References

1. Rosenberg SM, Tracy MS, Meyer ME. Perceptions, knowledge, and satisfaction with contralateral prophylactic mastectomy among young women with breast cancer: a cross-sectional survey. *Ann Intern Med.* 2013;159 (6):373–381.24042365
2. Portschy PR, Abbott AM, Burke EE. Perceptions of contralateral breast cancer risk: a prospective, longitudinal study. *Ann Surg Oncol.* 2015;22(12): 3846–3852.25762480
3. Mavaddat N, Peock S, Frost D, ; EMBRACE. Cancer risks for *BRCA1* and *BRCA2* mutation carriers: results from prospective analysis of EMBRACE. *J Natl Cancer Inst.* 2013;105(11):812–822.23628597
4. Kruper L, Kauffmann RM, Smith DD, Nelson RA. Survival analysis of contralateral prophylactic mastectomy: a question of selection bias. *Ann Surg Oncol.* 2014;21(11):3448–3456.25047478
5. Nichols HB, Berrington de González A, Lacey JV, Rosenberg PS, Anderson WF. Declining incidence of contralateral breast cancer in the United States from 1975 to 2006. *J Clin Oncol.* 2011;29(12):1564–1569.21402610
6. Musiello T, Bornhammar E, Saunders C. Breast surgeons' perceptions and attitudes towards contralateral prophylactic mastectomy. *ANZ J Surg.* 2013;83 (7–8):527–532.23043449

Table 1.

Knowledge Questions About Contralateral Prophylactic Mastectomy (CPM)

| Question | Answer Options | Correct Answer(s) | Surgeons Who Answered Correctly, No./Total No. (%) |
|---|---|---------------------------------|--|
| What is the 10-year risk of developing breast cancer in a 40-year-old <i>BRCA</i> carrier newly diagnosed with breast cancer? | <5%, 5%–10%, 10%–20%, 20%–30%, 30%–40%, and/or >40% | 20%–30% or 30%–40% ³ | 220/551 (39.9) |
| Does CPM provide a breast cancer-specific survival benefit for patients with early-stage breast cancer? | Yes or no | No ⁴ | 508/557 (91.2) |
| What is the contralateral breast cancer risk at 10 years for a 40-year-old woman with no additional risk factors? | <5%, 5%–10%, 10%–20%, 20%–30%, 30%–40%, and/or >40% | <5% or 5%–10% ⁵ | 493/548 (90.0) |
| What is the 5-year risk of developing a contralateral breast cancer for an invasive ductal carcinoma patient with no additional risk factors? | <2%, 2%–5%, 5%–10%, 10%–15%, 15%–20%, and/or >20% | <2% or 2%–5% ⁵ | 482/552 (87.3) |
| In a patient with invasive lobular carcinoma, what risk do you quote of developing a contralateral breast cancer over a 5-year period? | <2%, 2%–5%, 5%–10%, 10%–15%, 15%–20%, and/or >20% | <2% or 2%–5% ⁵ | 387/548 (70.6) |

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Table 2.

Univariate Analysis of the Association Between Demographic Factors and Knowledge Score

| Characteristics | Surgeons, No. (%) | | Odds Ratio (95% CI) | P Value |
|--|-------------------|--|---------------------|---------|
| | Total | High Level of Knowledge of CPM (4–5 Correct) | | |
| Age, y (n = 576) | | | | |
| 30–40 | 85 (14.8) | 54 (63.5) | 1 [Reference] | |
| 41–50 | 176 (30.6) | 108 (61.4) | 0.91 (0.53–1.56) | .74 |
| 51–60 | 192 (33.3) | 119 (62.0) | 0.94 (0.55–1.59) | .81 |
| >60 | 123 (21.3) | 72 (58.5) | 0.81 (0.46–1.43) | .47 |
| Years in practice (n = 589) | | | | |
| <5 | 47 (8.0) | 23 (48.9) | 1 [Reference] | |
| 5–19 | 251 (42.6) | 159 (63.4) | 1.80 (0.96–3.38) | .07 |
| 20 | 291 (49.4) | 178 (61.2) | 1.64 (0.89–3.05) | .12 |
| Work setting (n = 578) | | | | |
| Private practice | 350 (60.6) | 202 (57.7) | 1 [Reference] | |
| University/teaching hospital | 163 (28.2) | 114 (69.9) | 1.70 (1.15–2.53) | .01 |
| Other, please specify | 65 (11.2) | 38 (58.5) | 1.03 (0.60–1.76) | .91 |
| Location (n = 585) | | | | |
| New England | 132 (22.6) | 77 (58.3) | 1 [Reference] | |
| Midwest | 144 (24.6) | 83 (57.6) | 0.97 (0.60–1.57) | .91 |
| South | 195 (33.3) | 124 (63.6) | 1.25 (0.79–1.96) | .34 |
| West | 114 (19.5) | 73 (64.0) | 1.27 (0.76–2.13) | .36 |
| Proportion of practice devoted to breast disease (n = 580) | | | | |
| <20 | 32(5.5) | 16 (50.0) | 1 [Reference] | |
| 20–50 | 114 (19.7) | 59 (51.7) | 1.07 (0.49–2.35) | .86 |
| 50–80 | 87 (15.0) | 50 (57.5) | 1.35 (0.60–3.05) | .47 |
| >80 | 347 (59.8) | 233 (67.1) | 2.04 (1.01–4.24) | .03 |
| Level of postgraduate training (n = 576) | | | | |
| General and other surgery residency | 393 (68.2) | 230 (58.5) | 1 [Reference] | |
| Breast surgery/surgical oncology fellowship | 183 (31.8) | 130 (71.0) | 1.74 (1.19–2.54) | .004 |
| Sex (n = 574) | | | | |
| Male | 352 (61.3) | 228 (64.8) | 1 [Reference] | |
| Female | 222 (38.7) | 130 (58.6) | 0.77 (0.54–1.09) | .13 |
| No. of CPMs per mo (n = 573) | | | | |
| 0 | 80 (13.9) | 48 (60.0) | 1 [Reference] | |
| 1 | 182 (31.8) | 116 (63.7) | 1.17 (0.68–2.01) | .57 |
| 2–4 | 233 (40.7) | 149 (63.9) | 1.18 (0.70–1.99) | .53 |
| 4–6 | 51 (8.9) | 30 (58.8) | 0.95 (0.47–1.95) | .89 |
| >6 | 27 (4.7) | 17 (63.0) | 1.13 (0.46–2.79) | .79 |

Abbreviation: CPM, contralateral prophylactic mastectomy.

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